

Cooper Lighting Solutions Photometric Lab  
1121 Highway 74 South  
Peachtree City, GA 30269



Scaled data based on original data using  
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-  
State Lighting Products

Test Report Prepared for  
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P904043

Luminaire Tested: DFN2DIP-SQ4F0-080D160US830-RLLONL

Issue Date: 11/21/2024

**Test Information**

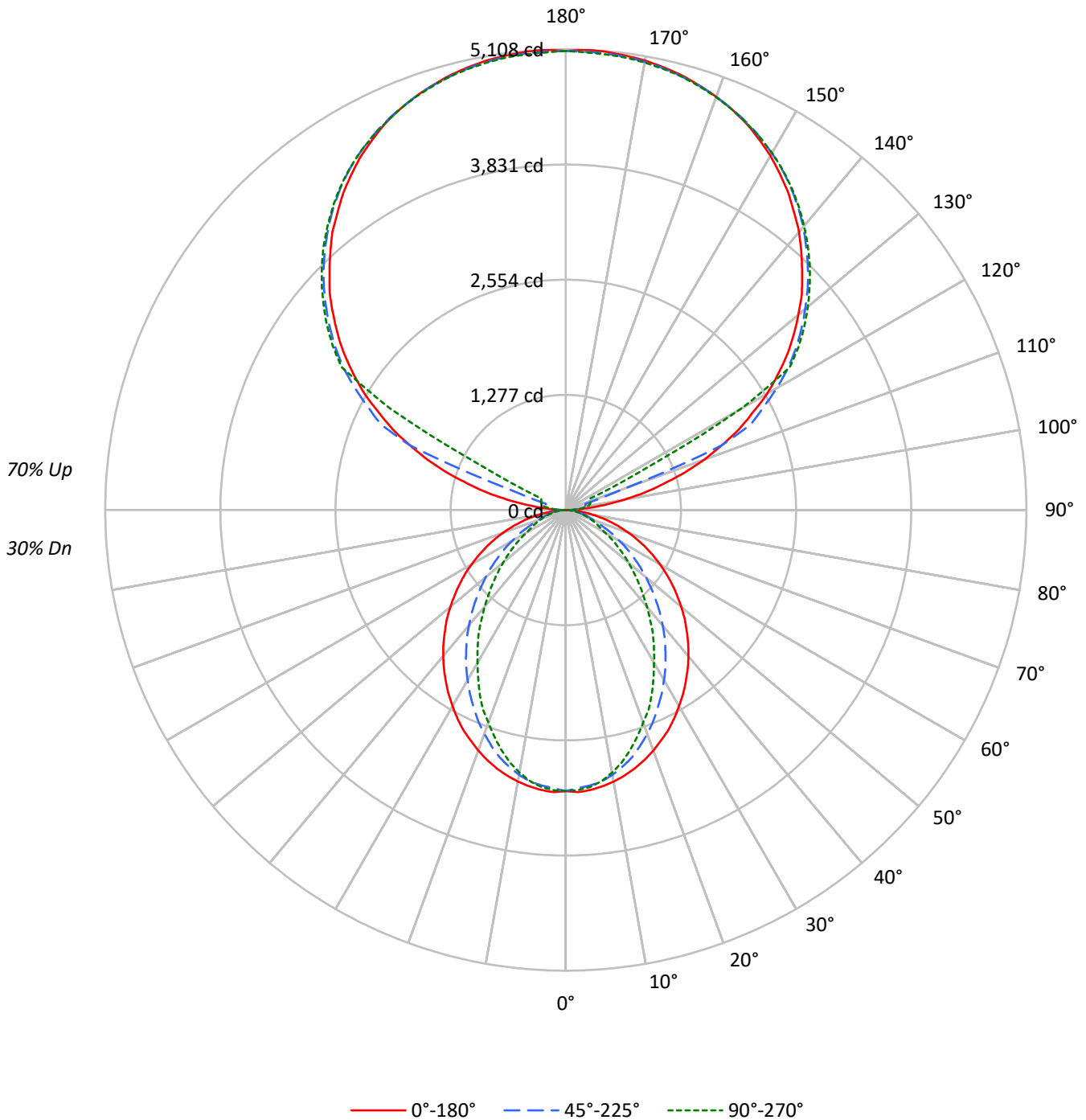
Test Method: LM-79-2019  
Report Number: P904043  
REPORT IS A COMBINATION OF REPORTS P901728 AND P898471  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-080D160US830-RLLONL  
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens  
Light Source: -  
Ballast/Driver: -

**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 21339.2 lumens  
Efficiency: N/A  
Efficacy: 110.3 lumens/watt  
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16  
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')  
CIE Type: Semi-Indirect  
  
Input Watts (W): 193.5  
Input Voltage (V):  
Input Current (Ain): NR  
Voltage Rise (V): NR  
Power Factor: 0.9954  
Total Harmonic Distortion (THDi): 0.076  
Frequency (hertz): 60  
Stabilization Time: NR  
Operation Time: NR  
Ambient Temperature (°C): NR  
Test Distance: 24 FT

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### Luminous Intensity Polar Plot





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**COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:**

RF	20				20				20				20				20				20	
RC	80				70				50				30				10				0	
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0	
RCR																						
0	102	102	102	102	92	92	92	92	72	72	72	54	54	54	38	38	38	38	38	38	38	30
1	94	90	86	83	84	81	77	75	64	62	60	48	47	46	34	33	32	34	33	32	26	
2	85	78	73	68	76	71	66	62	56	53	50	43	40	39	30	29	28	30	29	28	22	
3	78	69	62	57	70	62	57	52	50	46	42	38	35	33	27	25	24	27	25	24	19	
4	71	61	54	48	64	55	49	44	44	40	36	34	31	28	24	22	21	24	22	21	17	
5	66	55	47	41	59	49	43	38	40	35	31	30	27	25	22	20	18	22	20	18	15	
6	60	49	41	36	54	44	38	33	36	31	27	28	24	22	20	18	16	20	18	16	13	
7	56	44	37	31	50	40	34	29	32	28	24	25	22	19	18	16	15	18	16	15	12	
8	52	40	33	28	46	36	30	25	29	25	21	23	20	17	17	15	13	17	15	13	11	
9	48	37	29	25	43	33	27	23	27	22	19	21	18	15	16	13	12	16	13	12	10	
10	45	33	27	22	40	30	24	20	25	20	17	20	16	14	14	12	11	14	12	11	9	

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	2187	2187	2187
5°	2190	2152	2166
10°	2168	2111	2097
15°	2139	2041	1988
20°	2099	1946	1855
25°	2059	1838	1726
30°	2004	1728	1563
35°	1951	1609	1419
40°	1897	1487	1254
45°	1834	1351	1105
50°	1769	1213	959
55°	1701	1066	819
60°	1622	913	675
65°	1532	756	608
70°	1422	611	551
75°	1284	539	503
80°	1085	454	438
85°	755	305	333

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 2726 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	292.1	1.4
10°-20°	801.8	3.8
20°-30°	1125.7	5.3
30°-40°	1227.1	5.8
40°-50°	1127.8	5.3
50°-60°	885.7	4.2
60°-70°	576.5	2.7
70°-80°	296.8	1.4
80°-90°	84.7	0.4
90°-100°	167.8	0.8
100°-110°	625.6	2.9
110°-120°	1659.3	7.8
120°-130°	2752.0	12.9
130°-140°	2923.2	13.7
140°-150°	2716.8	12.7
150°-160°	2184.3	10.2
160°-170°	1407.5	6.6
170°-180°	484.4	2.3
0°-30°	2219.6	10.4
0°-40°	3446.7	16.2
0°-60°	5460.2	25.6
0°-90°	6418.3	30.1
90°-120°	2452.7	11.5
90°-150°	10844.8	50.8
90°-180°	14921.0	69.9
0°-180°	21339.2	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	3116	3116	3116	3116	3116	
5°	3116	3102	3066	3091	3083	296
15°	2964	2933	2837	2784	2756	835
25°	2691	2600	2414	2299	2256	1237
35°	2318	2174	1926	1749	1686	1451
45°	1895	1706	1410	1210	1142	1464
55°	1441	1221	916	747	694	1288
65°	973	744	491	395	386	965
75°	519	321	226	206	203	549
85°	121	62	54	54	54	139
90°	4	44	73	92	99	20
95°	239	118	144	162	158	283
105°	1120	1230	225	265	280	1196
115°	2118	2180	2272	567	302	2085
125°	2994	3042	3112	3138	3149	2670
135°	3705	3764	3797	3834	3826	2862
145°	4298	4294	4357	4382	4364	2688
155°	4732	4699	4744	4766	4736	2181
165°	4986	4964	4975	5001	4975	1409
175°	5100	5075	5082	5108	5071	485
180°	5090	5090	5090	5090	5090	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	3116.4	3116.4	3116.4	3116.4	3116.4
2.5°	3130.5	3116.4	3085.3	3113.7	3108.0
5°	3116.4	3102.4	3065.5	3091.0	3082.6
7.5°	3091.0	3074.2	3034.7	3045.8	3031.7
10°	3057.1	3037.4	2981.2	2972.5	2955.7
12.5°	3015.0	2989.6	2913.2	2896.4	2865.3
15°	2964.1	2933.0	2837.2	2783.7	2755.5
17.5°	2904.8	2859.7	2741.2	2679.3	2634.0
20°	2837.2	2780.7	2639.8	2569.5	2507.2
22.5°	2763.9	2699.0	2535.3	2439.6	2397.4
25°	2690.6	2600.3	2414.1	2298.7	2256.2
27.5°	2603.2	2507.2	2301.3	2168.8	2103.8
30°	2510.2	2402.7	2177.2	2033.5	1957.2
32.5°	2419.8	2290.0	2059.0	1889.6	1819.0
35°	2318.4	2174.4	1926.4	1748.7	1686.4
37.5°	2219.6	2064.4	1802.2	1607.4	1537.1
40°	2115.3	1946.2	1672.4	1472.2	1398.8
42.5°	2008.1	1827.7	1542.8	1334.0	1263.6
45°	1895.3	1706.2	1410.2	1209.8	1142.2
47.5°	1788.2	1588.0	1283.4	1082.9	1021.0
50°	1669.6	1469.5	1159.2	964.4	905.4
52.5°	1553.9	1342.3	1040.7	854.6	801.1
55°	1441.1	1221.2	916.5	747.4	693.9
57.5°	1325.6	1099.9	806.7	648.8	603.5
60°	1207.0	981.5	690.9	547.2	502.1
62.5°	1091.6	865.9	592.2	456.9	434.5
65°	973.1	744.4	490.7	395.0	386.3
67.5°	860.3	631.7	395.0	346.8	338.5
70°	741.8	521.9	327.1	298.9	287.6
72.5°	629.0	420.1	273.5	251.1	245.3
75°	518.9	321.4	225.6	205.9	203.2
77.5°	409.1	228.3	177.8	166.4	160.7
80°	307.3	163.7	135.3	124.1	124.1
82.5°	214.2	110.1	93.0	87.4	87.4
85°	121.2	61.9	53.5	53.5	53.5
87.5°	45.1	22.4	22.4	19.8	19.8
90°	3.5	44.2	73.4	92.3	99.2
92.5°	92.3	77.4	88.3	95.8	99.2
95°	239.2	117.6	143.5	162.2	158.3
97.5°	430.7	129.0	187.6	199.0	202.5
100°	652.1	147.4	209.9	239.2	246.7
102.5°	894.8	887.8	217.4	257.6	268.9
105°	1119.6	1230.2	224.8	265.0	279.8
107.5°	1381.0	1472.9	232.2	272.5	287.3
110°	1631.6	1708.6	644.6	276.4	290.8



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1867.4	1933.4	1870.9	283.4	294.7
115°	2117.5	2180.0	2272.3	567.2	302.2
117.5°	2334.9	2408.3	2471.3	1944.4	979.6
120°	2578.0	2633.1	2699.5	2743.7	2246.5
122.5°	2784.0	2843.0	2916.9	2938.8	2942.7
125°	2993.9	3042.0	3112.0	3137.8	3148.8
127.5°	3185.4	3237.1	3292.6	3329.3	3332.8
130°	3366.1	3425.1	3465.4	3506.0	3502.5
132.5°	3550.2	3598.2	3638.5	3671.8	3668.3
135°	3704.9	3764.0	3796.8	3834.0	3826.5
137.5°	3866.8	3911.0	3948.1	3984.9	3973.9
140°	4025.1	4054.8	4095.1	4128.3	4110.0
142.5°	4158.0	4183.9	4231.5	4260.9	4242.5
145°	4298.0	4294.0	4356.6	4382.4	4364.1
147.5°	4419.1	4408.2	4470.8	4489.1	4474.6
150°	4537.2	4511.4	4570.5	4592.3	4574.0
152.5°	4636.5	4607.1	4662.3	4684.6	4658.8
155°	4732.2	4699.4	4743.6	4765.5	4736.2
157.5°	4809.7	4780.4	4813.6	4839.4	4809.7
160°	4876.1	4853.8	4876.1	4898.0	4872.2
162.5°	4934.8	4912.9	4931.2	4957.0	4923.8
165°	4986.3	4964.5	4975.4	5001.2	4975.4
167.5°	5027.0	5004.7	5016.1	5041.8	5008.7
170°	5060.2	5038.0	5045.3	5071.2	5038.0
172.5°	5082.1	5060.2	5067.7	5093.5	5060.2
175°	5100.5	5074.6	5082.1	5107.9	5071.2
177.5°	5107.9	5082.1	5086.1	5111.9	5078.6
180°	5089.5	5089.5	5089.5	5089.5	5089.5



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**CIE UGR TABLE:**

Reflectances:											
Ceiling		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	7.66	8.35	8.77	9.45	10.99	3.62	4.31	4.73	5.42	6.95
	3H	9.33	9.94	10.45	11.06	12.61	4.80	5.41	5.92	6.53	8.08
	4H	9.93	10.52	11.07	11.63	13.19	5.24	5.83	6.37	6.94	8.50
	6H	10.35	10.89	11.49	12.01	13.57	5.55	6.09	6.70	7.21	8.78
	8H	10.48	10.99	11.62	12.12	13.68	5.64	6.15	6.79	7.29	8.85
	12H	10.53	11.02	11.68	12.15	13.73	5.68	6.17	6.83	7.29	8.88
4H	2H	7.66	8.24	8.80	9.36	10.91	4.20	4.78	5.34	5.90	7.45
	3H	9.48	9.97	10.63	11.11	12.67	5.54	6.02	6.68	7.17	8.73
	4H	10.17	10.62	11.32	11.75	13.33	6.08	6.53	7.23	7.66	9.24
	6H	10.68	11.06	11.84	12.22	13.79	6.49	6.88	7.65	8.03	9.61
	8H	10.86	11.21	12.01	12.36	13.95	6.62	6.98	7.77	8.12	9.71
	12H	10.95	11.27	12.12	12.43	14.03	6.68	7.00	7.85	8.16	9.76
8H	4H	10.13	10.48	11.28	11.63	13.22	6.35	6.71	7.51	7.86	9.45
	6H	10.69	10.99	11.87	12.18	13.76	6.87	7.16	8.04	8.35	9.94
	8H	10.91	11.17	12.09	12.33	13.94	7.06	7.31	8.24	8.48	10.09
	12H	11.05	11.27	12.23	12.44	14.08	7.17	7.40	8.35	8.56	10.20
12H	4H	10.07	10.40	11.24	11.55	13.15	6.35	6.68	7.52	7.83	9.43
	6H	10.67	10.92	11.85	12.09	13.70	6.92	7.17	8.10	8.34	9.95
	8H	10.88	11.11	12.07	12.27	13.92	7.12	7.35	8.31	8.51	10.15